

AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings includes changes to Fig. 1. This sheet, which includes Fig. 1, replaces the original sheet including Fig. 1. In Figure 1, repeated reference numeral 16 has been deleted.

Attachment: Replacement Sheet(s)
Annotated Sheet Showing Changes

REMARKS/ARGUMENTS

Claims 1-13 are present in this application. By this Amendment, the drawings, the specification and claims 1 and 11 have been amended. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

Entry of this Amendment is proper under 37 C.F.R. §1.116 since the Amendment: (a) places the application in condition for allowance (for the reasons discussed herein); (b) does not raise any new issue requiring further search and/or consideration (since the amendments amplify issues previously discussed throughout prosecution and raised by the Examiner in the previous Office Action); (c) satisfies a requirement of form asserted in the Office Action; (d) does not present any additional claims without canceling a corresponding number of finally-rejected claims; and (e) places the application in better form for appeal, should an appeal be necessary. The Amendment is necessary and was not earlier presented because it is made in response to arguments raised in the Final Rejection. Entry of the Amendment is thus respectfully requested.

Notwithstanding that entry of the amendments herein is appropriate as discussed above, Applicants respectfully submit that the finality of this Office Action is premature and should be withdrawn. At least the objection to the disclosure and the objection to claim 11 in paragraphs 4 and 5 of the Office Action, respectively, were not in any manner “necessitated by Applicants’ amendment.” Thus, in order for Applicants to have a fair opportunity to respond to these objections, Applicants respectfully request that the finality of this Office Action be withdrawn.

FIG. 1 has been amended to delete the repeated use of numeral ‘16.’ An annotated drawing sheet and a replacement drawing sheet are attached. Withdrawal of the objection is requested.

The disclosure has been amended herein to obviate the informalities noted in paragraph 4 of the Office Action. With regard to claim 1, Applicants respectfully submit that the use of the term "being" is appropriate in the context of the language set out in the claim. Claim 1 defines structure as "the rotatable members . . . being positioned . . . , and a circumferential distance . . . being smaller Claim 11 has been amended as suggested by the Examiner. Withdrawal of the objections is requested.

Claims 1, 8-10 and 12 were rejected under 35 U.S.C. §102(b) over U.S. Patent No. 4,084,324 to Whitehouse. This rejection is respectfully traversed.

Claim 1 has been amended to clarify that the measuring apparatus comprises a single detector. Claim 11 has been similarly amended to recite that the detecting apparatus comprises a single detector. Whitehouse discloses a surface measurement apparatus having three or more transducers (detectors) which produce individual signals directly relating to the distance between the surface under test and the support which houses the transducers. The three signals are combined in such a way that the effects of movement of the support structure are removed so that the composite output signal includes no imperfections in the reference datum. This allows the surface parameters of the test surface to be measured to a high degree of accuracy. Therefore, it is critical that the apparatus of Whitehouse contains at least three transducers such that this composite signal can be calculated. Whitehouse is concerned with measuring the surface roughness, waviness, error of form or other textural information of the test surface. Because of this, it is necessary to ensure that the only alternations in the signals produced by the transducers come from alterations in the surface rather than movement of the reference datum.

In comparison, the apparatus defined in claims 1 and 11 is intended to locate areas of deformation of a pipe. Minor fluctuations in pipe radius are not significant, and therefore it is

not necessary to measure the pipe to the accuracy of Whitehouse. Further, it is in fact advantageous for the apparatus of the present invention to register movement of the detector housing, as in this way circumferential creep is more likely to be detected upon one run of the apparatus. In other words, if one of the guide wheels encounters an area of circumferential creep, the radial position of the wheel and hence the housing will shift, altering the reading of the detector. This allows an area of deformation to be discovered by the device even if the detector does not encounter this directly.

Applicants thus respectfully submit that the rejection is misplaced. Moreover, Applicants submit that it would not have been obvious to modify the Whitehouse structure to utilize a single detector as Whitehouse requires at least three transducers to achieve its intended functionality.

Still further, Applicants respectfully submit that Figure 5 in the Whitehouse patent is far from a clear and unambiguous disclosure of the guide configuration defined in claims 1 and 11. In particular, the apparatus shown in Figure 5 requires the use of guide 25, which is arranged to contact the cylindrical component at a point spaced 90° around the circumference from the transducers. This guide is used to ensure that all the transducers traverse the same path along the work piece under test. Whitehouse therefore teaches that the wheels 24, presumably similar to the guide members of the claimed invention, are not suitable for guiding the apparatus on their own and that an additional guide member is required.

With regard to the dependent claims, Applicants submit that these claims are allowable at least by virtue of their dependency on an allowable independent claim.

Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1, 3, 11 and 13 were rejected under 35 U.S.C. §102(b) over U.S. Patent No. 4,903,413 to Bellwood. This rejection is respectfully traversed.

Bellwood concerns a surface profile measurement device comprising a dynamic probe and two fixed feet, the feet being capable of detecting irregularities in the workpiece surface with equal sensitivity to the probe. Consequently, these feet can be seen to also be probes and are indeed referred to as such throughout the citation (see reference to the “dynamic” and “fixed” probes). Therefore, Bellwood can also be seen to require the provision of more than one sensor. This is because this citation is also concerned with detecting small changes in the profile of the workpiece, and hence the signals obtained from the probes are combined to remove fluctuations resulting from movement of the housing, or yoke.

In addition, the apparatus of Bellwood is arranged to remain stationary while the workpiece is rotated. Therefore, the apparatus measures the circumference of the workpiece. In contrast, claims 1 and 11 require guides for guiding the detector along the pipe in a direction parallel to a longitudinal axis of the pipe, the guide comprising rotatable members. The “guides,” or more accurately fixed probes, of Bellwood are not rotatable in the sense of the present invention and are not capable of guiding the apparatus in a longitudinal direction.

Applicants thus respectfully submit that the rejection of claims 1 and 11 is misplaced.

With regard to the dependent claims, Applicants submit that these claims are allowable at least by virtue of their dependency on an allowable independent claim.

Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 2 and 5-7 were rejected under 35 U.S.C. §103(a) over Whitehouse or Bellwood in view of U.S. Patent No. 5,535,143 to Face. Although the Face patent discloses a single sensor, the sensor is not arranged between the guide members as required by the claims. The guide wheels 3 and 4 are co-linear with the sensors 5 and therefore would not contact the pipe at different points of its circumference as claimed. Furthermore, the apparatus of Face is not

intended for use with a pipe, as can clearly be seen from the apparatus shown in Figures 5 and 6. The apparatus is arranged to measure the displacement of the sensing wheel in relation to a reference datum which is calculated on the basis of a line joining the front and rear guide wheels. This is based on the assumption that these wheels will traverse the same path and hence that a suitable datum can be obtained. If it was attempted to adapt this sensor for use on a pipe, however, the wheels would traverse different parts of the pipe and therefore come into contact with differing terrains. Consequently, it would not be a trivial matter to adapt this apparatus for use with a pipe, and Applicants respectfully submit that these dependent claims are allowable at least by virtue of their dependency on an allowable independent claim. Withdrawal of the rejection is respectfully requested.

Claim 4 was rejected under 35 U.S.C. §103(a) over Whitehouse in view of U.S. Patent No. 5,623,107 to Patterson, Sr. et al. The Patterson patent is cited only due to its use of magnetic wheels and performs a completely different function to the apparatus of the present invention. Patterson thus does not correct the deficiencies noted above with regard to the Whitehouse patent. As such, Applicants submit that claim 4 is allowable at least by virtue of its dependency on an allowable independent claim. Withdrawal of the rejection is requested.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the claims are patentable over the art of record and that the application is in condition for allowance. Should the Examiner believe that anything further is desirable in order to place the application in condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Prompt passage to issuance is earnestly solicited.

EDWIN et al.
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Respectfully submitted,

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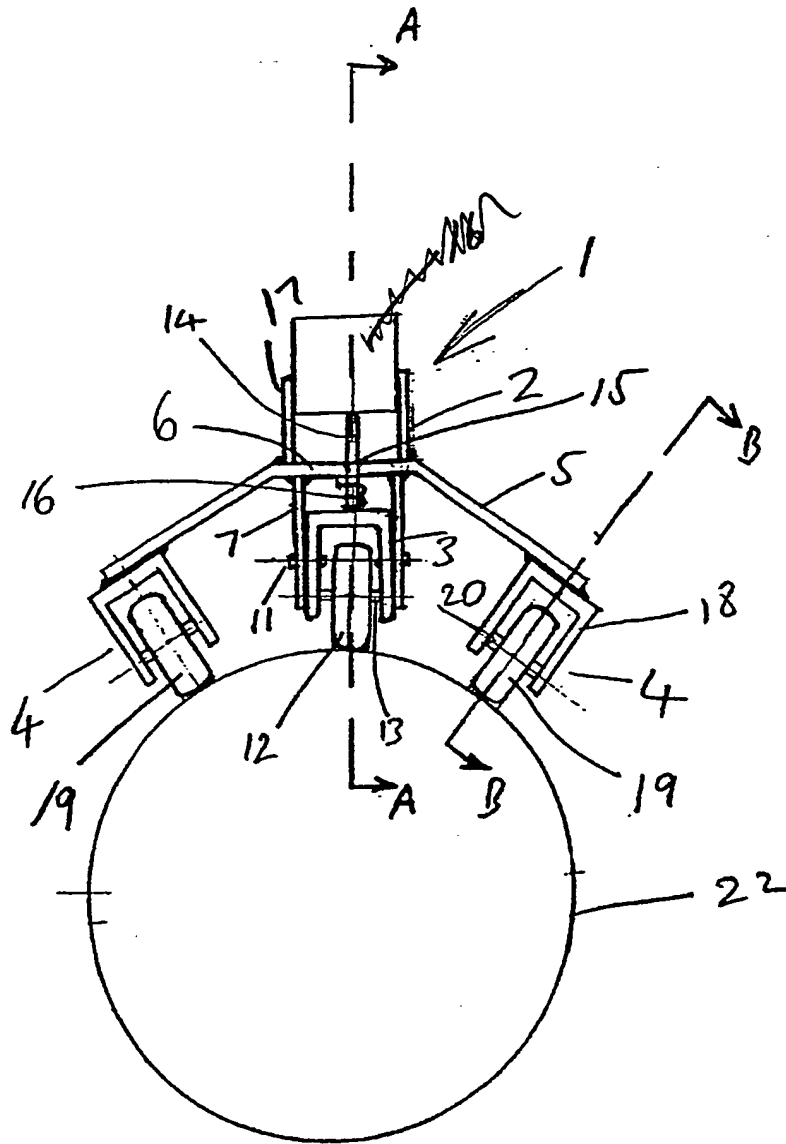


Fig 1